DOCUMENT RESUME

ED 280 079 CS 210 395

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TITLE Multi-Literacy and Research on Word Processing: Assessing Teaching Methods.
PUB DATE 21 Mar 87
NOTE 9p.; Paper presented at the Annual Meeting of the Conference on College Composition and Communication (38th, Atlanta, GA, March 19-21, 1987).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Computer Assisted Instruction; *Computer Literacy; Educational Research; Higher Education; Instructional Material Evaluation; *Student Attitudes; *Teaching Methods; *Word Processing; Writing Instruction
IDENTIFIERS *Word Processing Instruction

ABSTRACT

To provide students with an opportunity to become computer literate, the University of Michigan has required at least one computer-intensive writing class. A fully equipped computer lab has been provided for students who do not own a computer. In order to determine the most effective technique for teaching students how to use the word processors, a study using 23 subjects who represented approximately the larger student population in age, gender, and computer experience examined three methods: (1) hard copy documentation (using the manuals that came with the word processors); (2) online documentation (from the tutorials offered with most word processors); and (3) tutoring by consultants . Students were taught to perform three simple tasks using the word processor, and each task was taught using a different one of the three teaching methods. The order of the tasks and the teaching methods were rotated to neutralize effects of sequence. Subjects were then tested to make sure they had learned the tasks and asked to fill out questionnaires concerning their attitude toward each teaching method (a preliminary questionnaire had asked them about experience with, attitude toward, and apprehension about word-processors). All students preferred the consultants' tutoring to the online tutorials or hardcopy documentation. (Tables of results are included.) (AEW)

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MULTI-LITERACY AND RESEARCH ON WORD-PROCESSING: ASSESSING TEACHING METHODS

Presentation for

College Conference on Composition and Communication
March 21, 1987, Atlanta, Georgia

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"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Let me construct a scenario for you: Your university has decided that all students must have an opportunity to become computer-literate. In order to partially fullfill this goal, students will be required to take at least one computer-intensive writing class. That means they must prepare all drafts of their papers using a computer word-processor. For those students who do not own a computer, your university has created a computer lab (or labs) equipped with enough computers and staffed with enough personnel to allow all students to use computers to help them write.

Your university may have such computer lab, but if it doesn't, I urge you to work toward the goal of establishing one. It's time for you and your administration to rethink your priorities--to expand the horizons of opportunity for your students. For today, students who are not computer-literate are nearly as severely handicapped in their ability to write efficiently as were those who in past years were unable to use a typewriter.

If it is difficult to convince your administration that your

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students need a well-equipped and well-staffed computer lab, you might remind them that young people and the parents who pay for their education <u>are</u> aware of the importance of computer-literacy. Adequate computer facilities for student use can only enhance the attractiveness of college programs. As college administrators strive to retain their enrollment and to attract new students they would be wise to keep this in mind.

But, to go back to my scenario, I'm now going to ask you to imagine that, miraculously, you do have the ideal computer lab and that you are the person who is responsible for teaching students who come into your lab how to use computers for word-processing.

Here it is, Monday morning, and you have four clients, Fran, Ron, Josh, and Marilyn. Fran is forty years old. She has been out of school for twenty years and is returning to finish her degree in education. She has never used a computer and is very hesitant to begin doing so. Ron is thirty-eight. He used a computer for technical tasks while in the Air Force, but he has never used a word-processor, and he types using the hunt and peck method. Josh is nineteen, a computer science major, and although an inexperienced writer, an eager computer user. Marilyn is a senior English major and has used a computer spread-sheet in her work-study job in the Registrar's office, but she is not familiar with word-processors.

How are you going to teach each of these four students with such different backgrounds in the most humane, and therefore

efficient, manner? This is the question the study I will describe in this paper was designed to help answer.

When the Director of the Center for Computer-Assisted Language Instruction (CCLI) at Michigan Technological University, Dr. Cynthia Selfe, and I began visualizing this project, we hypothesized that different students, bringing different experiences and different capabilities to our lab, would learn best from different methods. We also suspected that human tutors would provide instruction which would allow even the most apprehensive students to become computer-literate. But we had never formally examined the different backgrounds of our students nor were we aware of any studies which assessed the different learning methods commonly used to teach word-processing.

A search of the literature revealed that there have been many studies on computers and word-processing. Most of this research deals with how people use word-processors and how computer-use affects their writing. But there has been little attention to how individuals learn to use a word-processor (but see bibliography). Such a dearth of information on this important pedagogical topic emphasizes why we teachers must conduct research in the classroom. For although we may have our hunches and intuitions about which teaching methods are the most efficacious, how can we feel confident that our solution to a problem is the best one without conscientious and objective studies? If our hypotheses are never rigorously or empirically

examined, how can we ever develop a body of knowledge upon which to base the rationale for our teaching procedures?

But, back to the topic of this paper. The research was done during 1985-86. The CCLI is a Humanities Department computer lab with both IBM PC and Apple MacIntosh Computers. The students who participated in this study had come to the CCLI to learn to use Volkswrite 3, the word-processor we use with our IBM PCs. We designed the study to give us information about how our students felt about three different kinds of teaching methods commonly used for word-processing.

The methods we studied were 1) hard-copy documentation--using written material such as that found in the manuals accompanying word-processing software; 2) on-line documentation read from the computer screen such as that found in tutorials offered with most word-processors; and 3) tutoring by human consultants who give directions and instructions, and answer questions for each individual student.

We worked with a sample of 23 subjects who were approximately representative of the larger population who comes to our lab in age, gender, and computer experience. As you can see on Table I, there were more young males than any other group. That's because Michigan Tech has such a large engineering enrollment. On a preliminary questionnaire we asked our subjects about their experience with computers and word-processors, their attitudes toward computers and word-processors, their apprehension about

word processors, and their confidence in word-processors and reading skills. Answers on a scale from 0, the low, to 5, the highest, indicated that older students tended to be less experienced with computers and that both older and younger males tended to be less apprehensive than females in their age groups.

TABLE I
PROFILES OF SUBJECTS
(0 = low to 5 = high)

	No.	Age	Exp. Comp.	Exp. Wrd. Proc.	Att. Comp.	Att. Wrd. Proc.	Appr. Word Proc.	Conf. Wrd. Proc.	Conf. Read
Younger Males	11	21.4	3.50	2.2	4.2	4.78	1.50	3.94	4.05
Older Males	4	38	1.75	1.5	4.5	4.75	.75	4.00	4.25
Younger Females	4	21	2.62	2.0	3.3	3.62	1.87	4.37	4.13
Older Females	4	39.5	.50	0	3.0	4.00	2.00	3.62	4.75

We taught each of our subjects to perform three simple tasks using the word-processor Volkswriter 3. And each task was taught using a different one of the three teaching methods. The order of the tasks taught, and the teaching methods, were rotated to neutralize effects of sequence and skill difficulty. We then tested each subject to make sure that they had learned the tasks, and we also asked them to fill out final questionnaires to tell us about their attitudes toward each

teaching method.

Table II contains our results as measured by a final questionnaire.

TABLE II
INSTRUCTIONAL METHODS
(0 = low to 5 = high)

	HUMAN TUTOR			ON LINE			HARD COPY		
	Confi-dence	Enjoy-ment	Effec-tive-ness	Confi-dence	Enjoy-ment	Effec-tive-ness	Confi-dence	Enjoy-ment	Effec-tive-ness
YOUNGER MALES	4.82	4.59	4.82	4.73	4.36	4.41	4.45	3.41	3.77
OLDER MALES	4.13	4.50	4.50	4.13	4.00	4.00	4.50	3.25	3.25
YOUNGER FEMALES	4.88	4.88	4.75	4.63	4.38	3.88	4.13	3.88	3.88
OLDER FEMALES	4.50	4.75	4.88	3.50	2.75	2.63	3.25	3.38	3.25
AVERAGE	4..58	4.68	4.74	4.25	3.87	3.73	4.08	3.48	3.54

Again the numbers range from a low of 0 to a high of 5, indicating the most positive attitude. As you can see from the average scores, all groups of learners considered the tutoring method more effective and enjoyable than learning from on-line tutorials or hard-copy documentation. The second preferences for instructional method varied according to the age and gender of the subjects. Males, both younger and older, found on-line tutorials to be more effective and enjoyable than the hard copy

documentation. In contrast, older females found on-line tutorials to be less effective and enjoyable than hard-copy documentation. And younger females enjoyed on-line tutorials more than hard-copy documentation but considered both methods equally effective. All groups gave the tutorial method their highest ratings in levels of confidence.

We have concluded from this preliminary study that teachers who are concerned with enhancing students' confidence and stimulating positive attitudes toward the task of computer word-processing will want to provide computer facilities which offer trained tutors or consultants. Another alternative may be to institute an "each-one-teach-one" system of peer instruction. However, if tutorial help is only minimally available, our research suggests that a combination of on-line tutorials and hard-copy documentation may suffice for users with a high level of previous computer experience. But one-on-one tutorial sessions may be necessary for the most inexperienced users.

Finally, I would like to suggest that more people involved in university computer labs as well as English teachers conduct studies to increase our knowledge of word-processing, the way it is used, its affect on writing, and how it is best learned. It will take many more systematic investigations before we will be able to be confident that we are offering the best instructional methods for our students.

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